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DROSERA PRAEFOLIA TEPPER: A SPECIES ENDEMIC TO SOUTH AUSTRALIA

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Abstract

Drosera praefolia Tepper is reinstated as a species endemic to the Mt Lofty Ranges and Kangaroo Island of South Australia. A lectotype is selected, and an amplified description provided together with a table comparing *D. praefolia* and *D. whittakeri* Planchon. Some historical information and details of the biology of *D. praefolia* are included.

Introduction

Drosera praefolia was described by J.G.O. (Otto) Tepper (1892) in *Botanisches Centralblatt* 50:357. Tepper sent material to Mueller in Melbourne in 1882 "with the hope that that gentleman might describe it", but Mueller did not as the material was "insufficient". Tepper had been living at Clarendon in 1882 but by 1892 he resided at Norwood. In April 1892 he obtained more material from Clarendon and completed a detailed description and illustrations. He had however made drawings, notes and observations on the life cycle of *D. praefolia* since 1882. His 1892 paper was amazingly detailed for a 19th century taxonomic paper and shows that Tepper was a very observant naturalist, and how unusual a species *D. praefolia* is. The information he gave does not appear to have been used by later workers (Black 1924, Marchant 1986). Tepper's description of *D. praefolia* separated it from *Drosera whittakeri* on the basis of its flowering in the autumn before the leaves appear, of its *lateral* not terminal scapes, of the *white* tuber and *scaly* stolon and clearly showed that it is not a form of *D. whittakeri*. Yet Black (1924) reduced the taxon to *D. whittakeri* var. *praefolia* without comment, and Marchant and George (1982) treated it as a synonym of that species. Marchant (1986) stated that it was regarded as a 'precocious variant of *D. whittakeri*', while other workers, e.g. Prescott (1989) do not mention *D. praefolia*. Local naturalists, however, have recognised it and the 'Friends of Onkaparinga Park' depict the species on the cover of their 1989 brochure as "*Drosera praefolia* (Sundew)".

Lectotype (chosen here): Clarendon, grassy hillsides in very dry soils, 7 April 1882, *Tepper 618* (lecto: MEL); Clarendon, May 1882, *Tepper s.n.* (syn: AD). Both collections bear Tepper's labels with his manuscript name '*D. aphylla*'. His illustrations (p. 356) were based partly on the lectotype and partly on the syntype. His description was based on these collections and a further collection made in the same area in April 1892 (not found). Since no mention of a specimen collected in May 1882 is made in the protologue, the one collected on 7 April 1882 is selected as lectotype.

Drosera praefolia	*Drosera whittakeri*
Vegetative	
Tuber white, starchy.	Tuber red, fleshy.
Stolon invested with many lanceolate, glabrous, scales.	Stolon without scales.
Leaf rosette appearing after flowering, quite prostrate.	Rosette appearing after flowering, prostrate or not.
Leaves petiolate.	Leaves sessile.
Petiole not ribbed, with a few gland tipped hairs.	Flattened leaf base with 3-7 longitudinal ribs, eglandular.
Leaf lower surface with distinct red veining, one broad major vein and strong reticulate veins.	Leaf lower surface with indistinct veining, 3 major veins and weaker reticulate ones.
Leaf green above with contrasting broad red central stripe.	Leaf green or suffused red or wholly red, not striped.
Floral	
Flowers Feb. - April (before leaf rosette appears).	Flowers May - Dec. (after rosette appears).
Scape less than 0.4 mm diam., arising from the stolon (lateral).	Scape more than 0.4 mm diam. arising from centre of leaf rosette (apical).
Calyx segments 4-5 mm long, conjoined in basal 0.5 mm, not enlarging after flowering.	Calyx segments 5-6 mm long, free except at very base, enlarging after flowering.
Petals oblong, 6-9 mm long, 4-5 mm wide.	Petals obovate, 10-12 mm long, 6-10 mm wide.
Styles dichotomously branched.	Styles divided into many filiform segments.

Table 1: Comparative analysis of characteristics of *D. praefolia* and *D. whittakeri*.

Description

Tuber white, globose, c. 6 cm diam., starchy, and covered by black brittle tunicate sheaths. *Stolon* vertical, 2-6 cm long, white, with several ovate-lanceolate acute glabrous scale leaves 1-8 mm long, lower ones pale, upper ones greenish with red margins, roots at flowering short but elongating to 1-2 cm long. *Leaves* absent at flowering, later 5-10 in a prostrate basal rosette; petiole slender, red, 4-10 x 2-3 mm, not ribbed, margins upturned; lamina ovate, 9-20 x 7-10 mm, below glabrous, with one broad red main vein and distinct red lateral reticulate veining, above glandular hairy, with numerous pale curved uniform hairs topped with spherical bright red glands extending onto petiole, green with red

longitudinal stripe extending from the petiole almost to the apex, margins slightly denticulate with each tooth ending in a gland-tipped hair similar to those on the lamina. *Scapes* 1-many, 2-4 cm long, filiform, precocious, arising laterally from top of rhizome, sometimes connate basally so as to form an umbel. *Flowers* delicate, short-lived, usually opening singly. *Calyx* 4-6 mm long, punctulate, connate in basal 0.5 mm, lobes reddish or green, acute, not enlarging significantly after flowering. *Petals* white, oblong, shallowly notched, 6-9 x 4-5 mm, widely expanded. *Stamens* 5, filaments 2 mm long, anthers yellow. *Styles* 3, dichotomously branched. *Capsule* ovoid, to 3 mm long. *Seeds* 3-9, subcylindric, to 1 mm x 0.6 mm, often abortive, black and glossy, pitted one end, apiculate the other.

Distribution (Map 1)

Endemic to south-central South Australia in an arc from near Adelaide along the western flanks of the southern Mt Lofty Ranges to Kangaroo Island, usually in dry exposed sites in compacted clay-sand over laterite, or in lateritic gravel in low woodland associated with *Eucalyptus fasciculosa, Acacia paradoxa, Allocasuarina verticillata, Xanthorrhoea semiplana.* Often on exposed ridge tops but extending almost to sea level. Commonly with other *Droseras* including *D. whittakeri.*

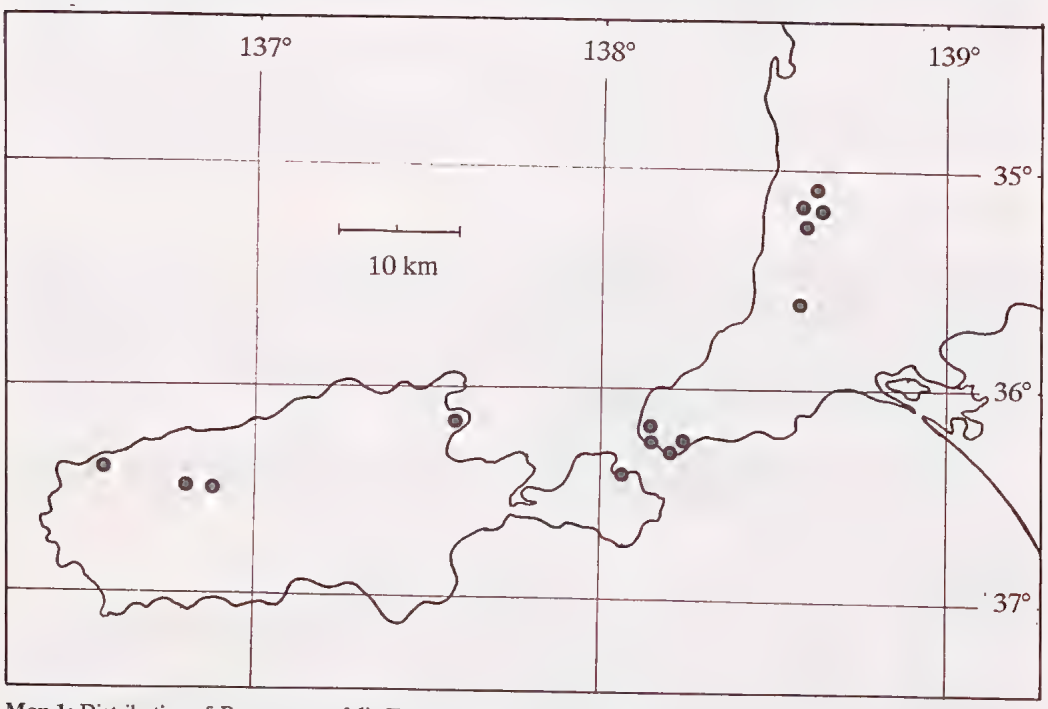
Flowering March - May, always before the leaf rosette is produced. Sweetly fragrant and visited by native bees, wasps and flies which are the chief pollinators.

Biology

The flowers of *D. praefolia* emerge from the ground one to two weeks after the first cold showers of the autumn. Heavy rain is not required; flowers have appeared after as little as 10 mm in the six weeks prior to their emergence. The extreme dry conditions of December - June 1990 did not appear to affect flowering time, size or number of flowers as some plants in the driest sites produced 10 or more flowers and released seed before the emergence of a single leaf. Flowers open singly or sometimes two together and last only two or three days so that there is a succession of flowers over a period of 2 - 21 days. Both native bees and flies have been seen to visit the perfumed and showy, glistening-white flowers which face distinctly upwards and expand widely in warm sunshine. At first the scape is erect, only 1-2 cm long but after flowering it elongates and becomes procumbent so that the seed capsule is placed on the ground. Many flowers do not set seed; in those that do develop seed, only a few of the seeds in the capsule mature, so that there are seeds of a varying size. The capsule matures about 4 weeks after flowering with seed usually released in May - June. The habit of *D. praefolia* of placing its seed capsules on the ground does not encourage wide dispersal.

The leaves appear only after good rains. In a wet autumn this may be only a week after flowering but in dry times may be 3 - 6 weeks later so that occasionally, as in 1990, seed is released before the leaves appear. The leaves are appressed to the ground soon after emergence even in shady sites so that the rosettes are always prostrate. The leaf rosette begins to die off in September and completely senesces with the advent of hot weather usually by mid-October. Roots are small for the size of the plant and in addition to the extra nutrients obtained through digestion of insects trapped by the sticky hairs on the leaves, a mycorrhizal association with soil fungi is likely. Fire or other disturbance is not required to facilitate flowering, but flowering is more profuse after bushfires. Plants usually form small loosely packed colonies. My observations agree completely with those of Tepper (1892) who devotes a good deal of space to the subject.

Although *D. praefolia* favours bare ground it still flowers under dense thickets of *Acacia paradoxa* at Sundews Lookout (overlooking the deep gorge of the Onkaparinga River). Near Cape Jervis plants occur in exposed sites overlooking the sea and are subjected to buffeting gales.



Map 1: Distribution of *Drosera praefolia* Tepper from collections at AD.

Collections examined:

AUSTRALIA: SOUTH AUSTRALIA: Southern Lofty: Deep Creek Cons. Park, Tapanappa, 3.iii.1990, *R. Bates 22149*; Piggott Range Rd, 30.iii.1983, *R. Bates s.n.* (flowering '2 weeks after heavy rain'); 2 km E of Cape Jervis, on dry grazed hills, also Talisker and Deep Creek Cons. Park, 10.iv.1989, *R. Bates 17555*; Onkaparinga Gorge Rec. Park, 25.v.1990, *R. Bates 23135*; Cherry Gardens, 10.iv.1910, *J.M. Black s.n.*; 5 km W Clarendon, 9.iv.1967, *R. Nash s.n.*; Onkaparinga Gorge Rec. Park NW corner over ironstone, 29.iv.1990, *E.L. Robertson s.n.*; 1½ km SW Cherry Gardens, 28.iv.1967, *T.J. Smith s.n.*; Scrubland at Cherry Gardens, 28.iv.1972, *T.J. Smith 1856*. Kangaroo Island: Old cemetery paddock Kingscote in clay soil, 10.v.1969, *G. Jackson 614, 615*; Gosse lands, 4 km S of Playford Highway in lateritic sand, 12.iv.1982, *G. Jackson 1516*; Rex Ellis property, Hundred of Borda, on camel track, 26.iv.1982, *G. Jackson 1522*.

Conservation status: Common and well conserved within its limited distribution.

References

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